

Variation of Wake Shape Parameters
10/15/98 ldk

Comparisons are made between the calculated total relative velocity profiles for different combinations of the ISHAPE and IWAKE parameters. These results were obtained by modifying the test0 test case provided with the V072 code, so that in:

Case 1: ISHAPE = 2 and IWAKE = 2 (the original test0 values for these parameters)

Case 2: ISHAPE = 1 and IWAKE = 1

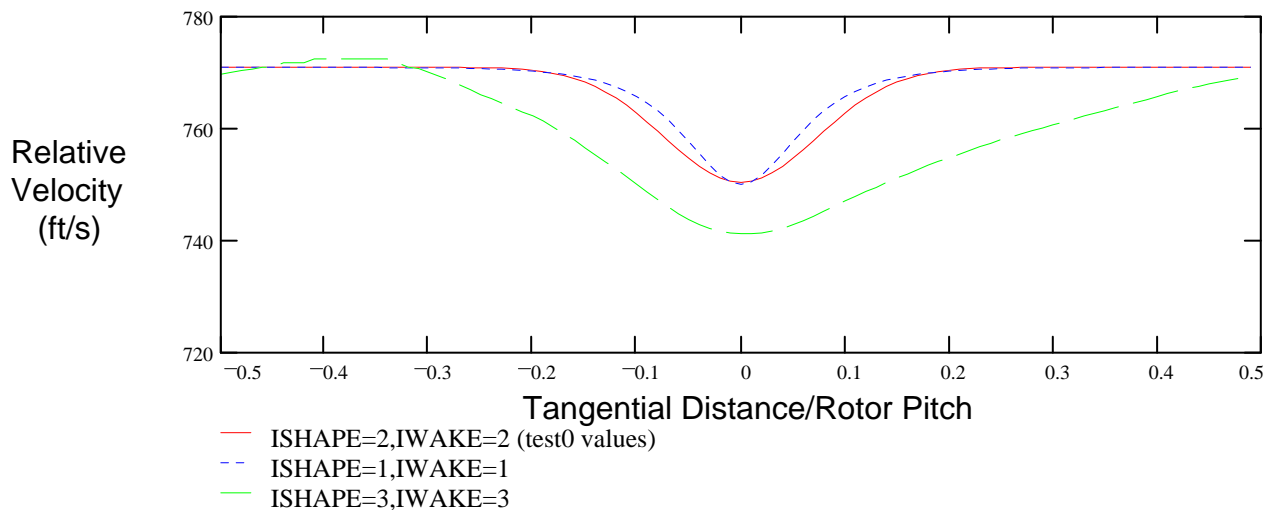
Case 3: ISHAPE = 3 and IWAKE = 3

For each of these cases, hub and tip vortices were not included (IHBVTX = 0 AND ITPVTX = 0)

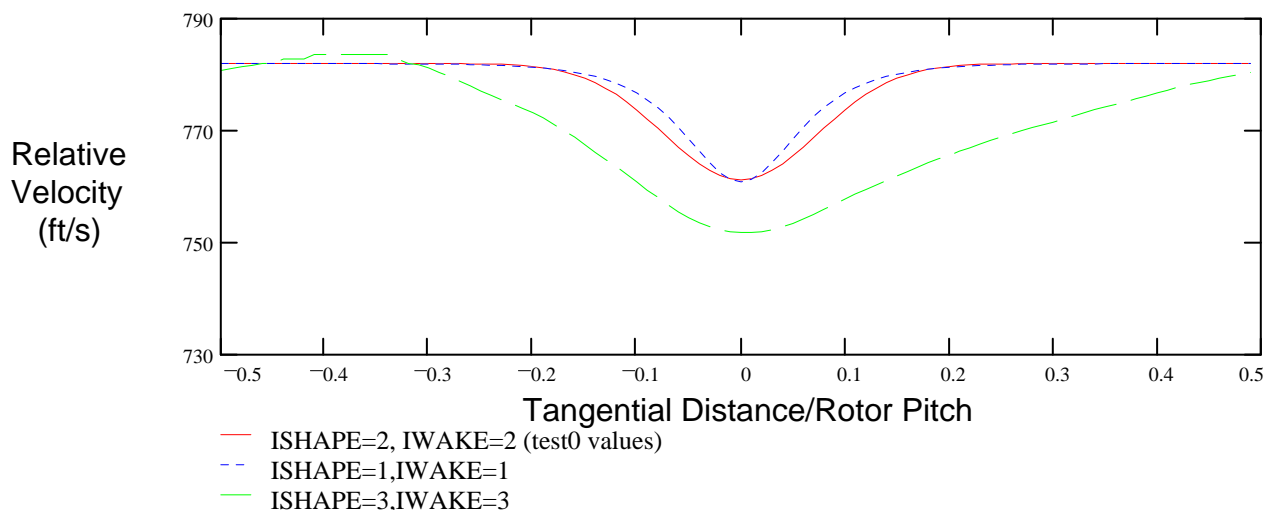
One hundred points per profile are plotted here. Normally, V072 writes 11 points per profile into the *.v072out file. The subroutine wrte78.f (found in the /v070_v078lib directory) was modified to output the desired number of normalized relative velocity values (WOWFRE) and normalized tangential distances (YNORM) into separate files suitable for plotting.

In these plots, Relative Velocity = WOWFRE*WFREE and YNORM = Tangential distance/Rotor Pitch

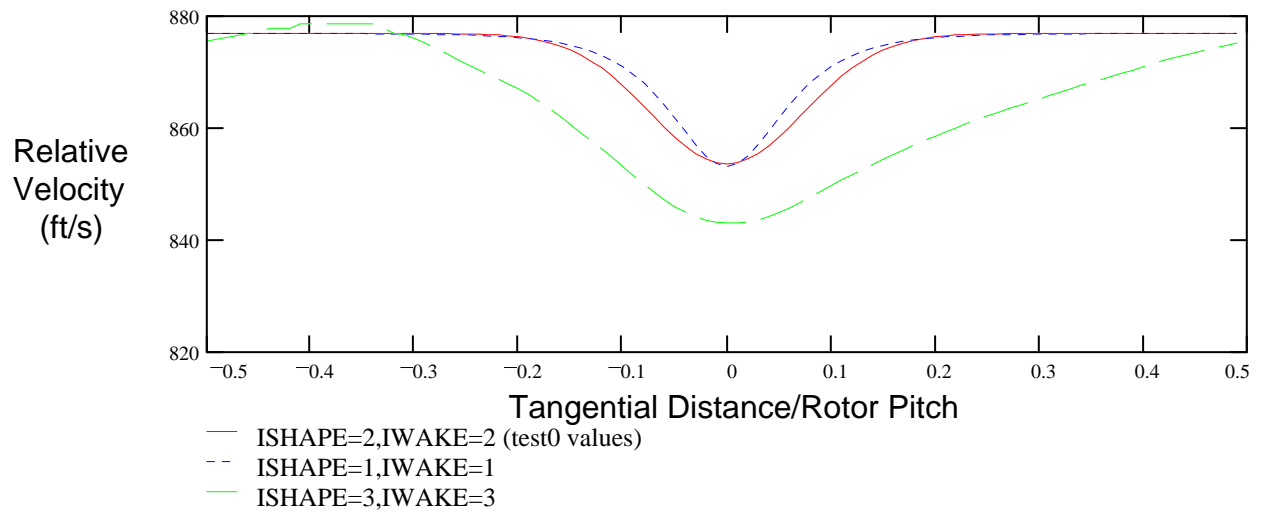
Comparison of Wake Shapes at a Radius of 27.87 Inches



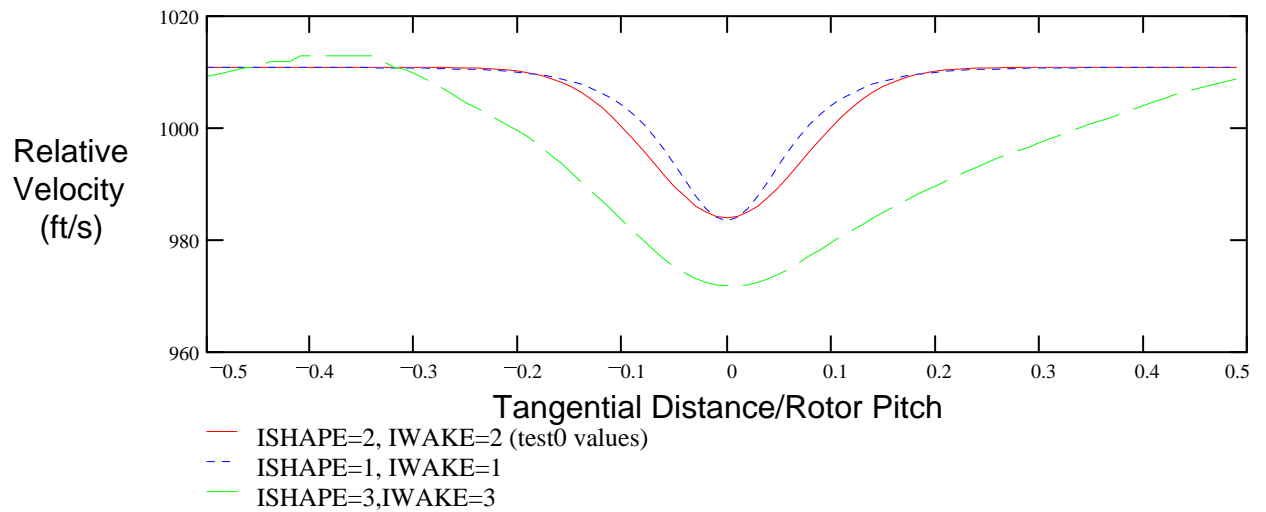
Comparison of Wake Shapes at a Radius of 33.00 Inches



Comparison of Wake Shapes at a Radius of 38.00 Inches



Comparison of Wake Shapes at a Radius of 42.00 Inches



Comparison of Wake Shapes at a Radius of 46.26 Inches

